



Environment, Health & Safety Division
Environmental Services Group

February 12, 2001
EP-01-005

Ms. Pamela Evans
Senior Hazardous Materials Specialist
Alameda County Health Services Agency
Department of Public Health Environmental Services
1131 Harbor Bay Parkway, Suite 230
Alameda, CA 94502-6577

Subject: Comments on the Berkeley Lab Tritium Sampling and Analysis Plan

Dear Ms. Evans:

Thank you for sending your comments on the Lab's Tritium Sampling and Analysis Plan. I've prepared a response to each one of your comments in the enclosed document. If you have any questions, please feel free to call me at 486-7614.

Sincerely,

Ron Pauer
Environmental Services Group

enclosure:

cc w/enclosure:

I. Javandel
R. Kolb
G. Lackner
D. McGraw
T. Powell
G. Zeman

Ernest Orlando Lawrence Berkeley National Laboratory

One Cyclotron Road Berkeley, California 94720

Tel: 510.486.7614

Fax: 510.486-4776

e-mail: ropauer@lbl.gov

General Comments on Sampling

- 1. Comment: Air modeling: Air modeling, using CALPUFF, CAP88, and UC Davis wind tunnel data, should proceed quickly and should be done prior to most environmental sampling. It will help estimate where heaviest concentrations of Tritium may have been deposited and thus has a bearing on sample locations. The storm water runoff and rainwater sampling should proceed immediately, as their data might no longer be timely if air modeling takes very long.**

Response: The Lab has substantial environmental sampling data for soil, sediment, surface water, vegetation, ambient air, and wind speed and direction. Several thousand environmental samples are taken each year. In addition, the Lab has already performed substantial CAP88 and CALPUFF computer modeling based not only on wind data taken from the center of our site, but also on wind data taken from the hillside stack area. This information, along with the Superfund guidance documents, was used to establish the sampling locations in the Tritium Sampling and Analysis Plan (TSAP).

SENES (Dr. Owen Hoffman) is performing an assessment for siting new ambient air stations, based on a change in the tritium stack location to the roof of building 75. CALPUFF and CAP88 computer models will be used for this assessment. A report will be provided to all Task Force participants before the next meeting, and Dr. Hoffman will present his results at the next meeting. UC Davis (Dr. Bruce White) is also performing a wind tunnel study. The Lab will consider changes to the ambient air sampling program based on this information as well.

Storm water runoff and rainwater sampling are conducted as part of the separate, ongoing environmental monitoring program and are not part of the TSAP. Comments have been received from Nabil Al-Hadithy and Pam Sihvola, and we are adding more storm water and rainwater collection stations to our separate, ongoing monitoring program.

- 2. Comment: Groundwater sampling: Although the current requirements for HRS LBNL do not include groundwater sampling, I understand that in the earlier evaluation of the site for Superfund status, it was included, and that HRS is supposed to include groundwater monitoring when sensitive organisms may be affected. Does LBNL have data from ongoing groundwater monitoring that could be used, even though HRS does not currently require it? Would the Lab willing to expand its groundwater monitoring (more wells, increased sampling frequency, expansion of contaminants sampled) for HRS or to address community concerns?**

Response: The Lab has substantial groundwater monitoring data including more than 1,000 samples for tritium from 90 wells. Sampling locations and the frequency of sampling have been reviewed and approved by the San Francisco Regional Water Quality Control Board. This information is available to the public at the UC Berkeley Doe Library. All of this data is also available to the EPA for its purposes, including use for HRS. Please be aware that under the Superfund Law, EPA retains authority for determining the HRS score.

Yes, even though there is substantial groundwater monitoring data, the Lab would be willing to consider expanding the groundwater monitoring program if there was good technical justification.

- 3. Comment: Link between sampling plans and HRS requirements: I was not able to find, in the January sampling plans or the May 1999 plans, a description of how the plans fulfill the purposes and goals of the HRS sampling requirements. Perhaps this information is in another document. I was left wondering how LBNL determined the type, location and total number of samples. A brief explanation of the links among the HRS requirements, other decision-making factors, and the sampling plans would be helpful.**

Response: The TSAP Quality Assurance Project Plan provides the link between the sampling plans and the HRS requirements. Please refer to the section called: Quality Objectives and Criteria for Measurement Data". The QAPP has recently been revised and will be sent out to all Task Force participants prior to the next meeting.

Soil Sampling

- 1. Comment: Legacy contaminants and deeper soil sampling: The proposed plan calls for sampling within two feet of the soil surface, yet past soil sampling has shown significant contamination much deeper. At a past meeting someone said that HRS calls only for shallow soil sampling. However, due to these past findings of deeper contamination, and due to citizens' concerns that a significant portion of contamination at the site is from a past era of more frequent tritiations, might it make sense to take some deeper soil samples?**

Response: Yes, the proposed sampling plan includes soil sampling within the first two feet of the soil surface because that is what is needed to meet EPA HRS requirements. Deeper soil samples have been collected from various depths at 18 locations as a part of the RCRA Corrective Action Process. These results were compiled in response to a comment from Dr. Carol Williams and distributed to all Task Force participants at the September Task Force meeting. All sampling data to date show the levels of tritium in soil to

be below the EPA recommended Preliminary Remediation Goal for residential areas (about 10,000 pCi/g). Please let me know if you need another copy of this information.

Vegetation Sampling

- 1. Comment: Offsite trees vs. onsite trees: It's not clear to me why only offsite trees will be sampled. Is this approach due to HRS protocols? It seems that LBNL staff should be considered part of the affected community, so sampling results from onsite trees seem relevant.**

Response: We do consider LBNL staff to be part of the potentially affected community. Substantial vegetation monitoring has been performed in the area of the grove of trees, near the hillside stack, including at onsite locations. This information has been provided in annual Site Environmental Reports (SERs), to the Tritium Issue Work Group and in the TSAP's Vegetation Sampling Plan for Tritium. The TSAP's Vegetation Sampling Plan was put together to respond to offsite community concerns; as a result, it only includes offsite locations. The SERs will continue to include both onsite and offsite vegetation sampling information.

Please be aware that vegetation sampling is not needed for HRS purposes.

- 2. Comment: Tree wood: While the growth pattern of eucalyptus may not form distinct annual tree rings, the community has expressed interest in whether there is a difference in Tritium concentrations in older vs. newer wood tissue. Discrete samples taken from sections of wood corings, rather than a homogenized sample of the entire core, might provide useful information if age of wood tissue can be at least roughly estimated based on distance from the center to the circumference of the trunk.**

Response: The Lab is currently considering a tree ring study to assess historical releases of tritium based on organically bound tritium content in the wood. Using the tree rings from the eucalyptus trees near the stack would not be very precise because they tend to grow erratically, which affects the formation of growth rings. The Lab is reviewing how useful this information will be (for assessing historical releases) if the determination of age is imprecise. There are also questions about how to interpret the organically bound tritium content in tree rings. These questions must be resolved prior to the development of a sampling plan. At this time, there are no plans to add a tree ring study to the TSAP.

Again, wood samples from tree rings are not needed for HRS purposes.

- 3. Comment: Leaves, duff and plant-transpired water samples: The plan indicates that samples of these materials will be collected at locations where a tree wood sample is collected. By locations, do you mean the same tree, or just a nearby tree?**

Response: Our first choice will be to collect leaf and plant-transpired water samples from the same tree. If not available (for example, access to the branches of the tree was not safe), then the next nearest tree will be considered. Duff will be collected on the ground, below the same tree.